II. Executive Summary

a. Project Title & Applicant Name

"Developing a Methodology to Accurately Simulate the Entrainment of Fish into Agricultural Siphon Diversions in the Sacramento-San Joaquin Delta"; Kevan Urquhart, Senior Biologist Supervisor (Marine/Fisheries), Fish Facilities & Laboratory Support Programs, Bay-Delta & Special Water Projects Div., Dept. of Fish & Game.

b. Project Description and Primary Biological/Ecological Objectives

We propose to purchase/lease a barge, and mount a pipe, pump, and flume to hold a sampling net on board it, then conduct paired and simultaneous sampling with DWR of one of their Sherman Island agricultural diversion siphons. We will use either a fish-friendly hidrostal centrifugal pump, or a suction dredge pump. We will use a net identical to the one DWR will be using in their diversion's outfall to prove whether our pumped method can duplicate the entrainment of an agricultural diversion siphon in the Delta.

Our data will be analyzed with paired sampling statistics, to demonstrate to what degree our methodology is likely to be precise enough to adequately predict/characterize the entrainment of siphons in any area of the Delta we might choose to sample in the future. If entrainment via both methods is highly correlated, we intend to develop a plan to use this same barge in FY 1999-2000 to sample various areas and channel types in the Delta. We envision sampling near to and duplicating/simulating the entrainment of various agricultural diversion pumps/siphons, in order to characterize which diversions, areas, or channel types in the Delta should be prioritized for screening of Threatened and Endangered species, and which others may not be cost-effective to screen at all.

c. Approach/Tasks/Schedule

We propose to complete this project in six separate, phased tasks. Initially (9/98-2/99) we will pursue completion of State and Federal T&E species take permits; US Coast Guard and State Lands Commission installation/navigation permits; procurement, service, and leased equipment contracts; site evaluation and selection; and final barge design and study plan review (Tasks 1-3).

We will assemble the barge-based sampling station, test it prior to transport to the study site in Horseshoe Bend between Decker and Sherman Islands, install it on site and conduct pre-sampling tests between 2/15-3/31/99 in Task 4.

As part of Task 5, paired sampling will occur over at least 32, and as many as 44, 8-hour sampling periods between 4/1-8/31/99, in concert with planned sampling by DWR's Ecological Services Office (DWR-ESO). Sampling will be randomized across various 8-hour periods representing day, night, and crepuscular time periods. A database of all project data will be up and accessible on the IEP's and DFG-Bay/Delta Division's Internet web pages by 9/31/99.

A summary article discussing all project results will be written for the Fall 1999 IEP Quarterly Newsletter. An interagency reviewed IEP Technical Report in the series published by DWR will be completed by 12/99, covering all project results, analysis, conclusions, and recommendations in detail. At least two oral/poster presentations will be made of the study results at the IEP's Annual Meeting in Asilomar in 2/2000, and at the Annual Meeting of the California-Nevada Chapter of the American Fisheries Society (Cal-Neva AFS) in 3/2000.

d. Justification for Project and Funding by CALFED

Screening the 2209 agricultural diversions in the statute Delta is a priority objective of the CALFED ERPP, CVPIA AFRP & AFSP, but it could cost over $66,000,000 to screen every one with the best available technology in positive barrier screens. Screening would be beneficial to

multiple species in many habitats of the Delta, after they are larger than egg and larval stages. All three plans/programs call for the prioritization and identification of which sites should be screened or consolidated. Very little useful information is available to make these decisions or develop a plan. This pilot sampling technique, if proven effective, could be used in the following two years to quickly develop the data needed for such plans, prioritization, and cost-benefit analyses.

e. Budget Costs & Third Party Impacts

The total proposal costs $263,414, of which we are requesting $200,000 from CALFED. We have preliminary conceptual approval of the proposal from DWR-ESO, and have reason to expect that they will be willing to provide $63,414, which is equal to 50% of permanent staff salaries and general operations. Their co-funding is dependant on this proposal also being approved by the IEP as part of its Calendar Year 1999 Planning Process (preliminary approval due 9/1/98, final approval given 11/15/98). There are no known third party impacts from this pilot study.

f. Applicant Qualifications

This study proposal will be executed by three graduate-degreed professional staff scientists (Senior Biologist Supervisor, Associate Fishery Biologist, Range B Fishery Biologist) and two experienced technicians of the Fish Facilities Research Unit in the Fish Facilities Program of DFG's Bay-Delta & Special Water Projects Division. This Unit has conducted applied fish passage and screening research in the Delta for the last 28 years, each of the current staff have more than a decade of applied aquatic research experience, and each have received specialized training in fish passage and screening technology. This Unit is a member of a Division that has been conducting applied terrestrial and aquatic research in the Delta, Suisun Marsh, and the Sacramento/San-Joaquin River basins for 37+ years.

g. Monitoring & Data Evaluation

There is no monitoring associated with this proposal as its intent is to develop a robust field technique for application over the following two years, to collect data necessary to develop a scientific management plan for the screening of small diversions in the statute Delta. Technical review and oversight of the study design and ongoing project will be accomplished as noted below in Section **II h.** Statistical analyses will be reviewed by DFG's Biometrics Unit.

h. Local Support/Coordination with other Programs/Compatibility with CALFED

If recommended by CALFED, we will seek local input and review from various local entities (Farm Bureau, Reclamation/Levee Maintenance/Water Districts), through the auspices of the Bay-Delta Advisory Council, Delta Protection Commission, and the Delta Chambers of Commerce. Our proposal has been submitted the IEP Ag/Municipal Diversion PWT for review, and will also formally be reviewed by the IEP Fish Facility Coordination and Review Team, as part of the IEP's Calendar Year 1999 planning cycle to secure matching funding. Both groups have representation from the NMFS, USFWS, USBR, DWR, and NRCS. We will also seek review from, and coordinate with DFG's Unscreened Diversions Program, DFG-Inland Fisheries Division's Interagency Screen Team, the CVPIA's Anadromous Fish Screen Program (AFSP), and NRCS' Fish Screen Program. This project is a CALFED objective listed in the ERPP and Appendices to the Proposal Solicitation Package.